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<120> Novel N-Acetylglucosaminyltransferase Genes

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<150> U.S. 60/095,919

<151> 1998-08-07

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<170> PatentIn Ver. 2.0

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<212> DNA

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Ile Leu Asp Leu Ser Lys Arg Tyr Val Lys Ala Leu Ala Glu Glu Asn

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Lys Asn Thr Val Asp Val Glu Asn Gly Ala Ser Met Ala Gly Tyr Ala

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Asp Leu Lys Arg Thr Ile Ala Val Leu Leu Asp Asp Ile Leu Gln Arg

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Leu Val Lys Leu Glu Asn Lys Val Asp Tyr Ile Val Val Asn Gly Ser

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Ala Ala Asn Thr Thr Asn Gly Thr Ser Gly Asn Leu Val Pro Val Thr

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Ser Thr Asn Gly Gly Gln Asp Lys Cys Val Phe Pro Pro Ile Asp Gly

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Tyr Pro His Tyr Glu Gly Lys Ile Lys Trp Ile Asn Asp Met Cys Arg

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Ser Asp Pro Cys Lys Ala His Tyr Gly Ile Asp Gly Ser Ser Cys Thr

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Trp Arg His Lys Asn Pro Tyr Asp Asp Ala Glu His Asn Ser Cys Ala

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Glu Ile Arg Ser Asp Phe Glu Leu Leu Tyr Ser Val Ile His His Lys

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Lys Lys Arg Lys Lys Ala Leu Val His Leu Gly Ile Ile Thr Lys Asp

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Leu Glu Thr Phe Gly Ser Asp Pro Asp Phe Glu His Ala Asn Tyr Ala

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Asn Asn Phe Tyr Thr Met Phe Pro His Thr Pro Glu Asn Thr Phe Leu

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Asn Glu Met Lys Arg Gln Asn Gln Thr Leu Val Tyr Gly Lys Val Asp

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Ser Phe Trp Lys Asn Lys His Ile Tyr Phe Glu Ile Ile His Asn Tyr

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Ile Glu Val Gln Ala Thr Val Tyr Asp Ser Ser Thr Pro Asn Ile Pro

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Ser Tyr Ser Arg Asn His Gly Ile Leu Ser Gly Arg Asp His Arg Phe

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Leu Leu Arg Glu Thr Phe Leu Leu Leu Gly Leu Gly Thr Pro Tyr Glu

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550

555

560

Arg Cys Ala Pro Leu Glu Ala Met Ala Asn Arg Cys Val Phe Leu Lys

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575

Pro Lys Phe Pro Pro Pro Asn Ser Arg Lys Asn Thr Glu Phe Leu Arg

580 585 590

Gly Lys Pro Thr Ser Arg Glu Val Phe Ser Gln His Pro Tyr Ala Glu

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Asn Phe Ile Gly Lys Pro His Val Trp Thr Val Asp Tyr Asn Asn Ser

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Glu Glu Phe Glu Ala Ala Ile Lys Ala Ile Met Arg Thr Gln Val Asp

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Pro Tyr Leu Pro Tyr Glu Tyr Thr Cys Glu Gly Met Leu Glu Arg Ile

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Pro Ser Pro Met Val Ala Ser Ser Cys Ser Pro Ala Ser Ala Arg Pro

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Thr Ala Pro Ser Thr Thr Ser Ser Ser Gln Ala Ser Pro Pro Pro Glu

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Arg Cys Ser Pro Ser Ile Pro Thr Arg Arg Thr Ser Ser Ala Ser Pro

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Thr Cys Gly Gln Ser Thr Thr Thr Gln Arg Ser Leu Lys Gln Pro

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Ser Arg Pro Leu Glu Leu Arg Thr Pro Thr Tyr Pro Thr Ser Thr Pro

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Ala Arg Gly Cys Trp Ser Gly Ser Thr Pro Thr Ser Ser Thr Arg Thr

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Ser Ala Glu Leu Gln Thr Thr Ala Leu Pro Glu Ala His Ala Pro Gln

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Ser Pro Phe Val Leu Ala Pro Asn Ala Thr His Leu Glu Trp Ala Arg

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Asn Thr Ser Leu Ala Pro Gly Ala Trp Pro Pro Arg Thr Pro Cys Gly

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Pro Gly Trp Pro Cys Leu Gly Gly Pro Ala Pro Thr Pro Ala Trp Thr

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Thr Gly Ser Val Ser Pro Pro Ser Ser Pro Ser Thr Ala Arg Thr Pro

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Ser Ser Ser Cys Arg Cys Pro Val Thr Ala Pro Ser Arg Arg Thr Thr

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Cys Thr Leu Gly Val Arg Pro Ala Trp Pro Gly Val Leu Pro Ala Glu

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Gly Ala Ser Ala Leu Gln Cys Ala Gly Ser Asn ... Lys Tyr Arg Arg

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Leu Cys Pro Cys Arg Asp Phe Arg Lys Arg Asn Ser Gly Arg Asn Ser

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Gly Ile Leu Leu Leu Phe Thr Ser Arg Val Phe Phe Leu Phe Phe Phe

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Lys Ser Phe Val Ala Tyr Leu Lys Leu Pro Phe Phe Ser Gln Val Cys

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Leu Phe Ala Ser Ser Glu Met Phe Phe Thr Ile Ser Arg Lys Asn Met

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Ser Gln Lys Leu Ser Leu Leu Leu Val Phe Gly Leu Ile Trp Gly

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Val Lys Leu Arg Glu Gln Ile Leu Asp Leu Ser Lys Arg Tyr Val Lys

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Ala Leu Ala Glu Glu Asn Lys Asn Thr Val Asp Val Glu Asn Gly Ala

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Ser Met Ala Gly Tyr Ala Asp Leu Lys Arg Thr Ile Ala Val Leu Leu

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Asp Asp Ile Leu Gln Arg Leu Val Lys Leu Glu Asn Lys Val Asp Tyr

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Ile Val Val Asn Gly Ser Ala Ala Asn Thr Thr Asn Gly Thr Ser Gly

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Asn Leu Val Pro Val Thr Thr Asn Lys Arg Thr Asn Val Ser Gly Ser

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Ile Arg Ile Ala Val Glu Asn His Leu Val Leu Leu His Pro Leu Trp

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Ile Ile Ser Tyr Gly Arg Lys Ala Leu Tyr Cys Trp Leu Arg Thr Glu

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Ala Ile Leu Tyr Asn Lys Ser Thr Asn Gly Gly Gln Asp Lys Cys Val

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Phe Pro Pro Ile Asp Gly Tyr Pro His Tyr Glu Gly Lys Ile Lys Trp

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Ile Asn Asp Met Cys Arg Ser Asp Pro Cys Lys Ala His Tyr Gly Ile

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Asp Gly Ser Ser Cys Thr Phe Phe Ile Tyr Leu Ser Asp Ala Asp Asn

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His Cys Pro His Ala Pro Trp Arg His Lys Asn Pro Tyr Asp Asp Ala

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Glu His Asn Ser Cys Ala Glu Ile Arg Ser Asp Phe Glu Leu Leu Tyr

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Ser Val Ile His His Lys Asp Phe Ile Phe Met Arg Leu Arg Arg

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Arg Arg Met Val Glu Gly Trp Ala Gln Ile Ala Lys Ser Leu Ala Asp

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Lys Gln Asn Ala Glu Lys Lys Arg Lys Lys Ala Leu Val His Leu

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Gly Ile Ile Thr Lys Asp Thr Val Ser Lys Ile Ala Glu Thr Gly Phe

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Ser Ala Ala Pro Leu Gly Asp Leu Val His Trp Ser Asp Val Ile Thr

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Pro Ser Val Gly Asp Arg Ile Val Glu Leu Leu Tyr Ala Asp Val Ile

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Gly Leu Gly Gln Phe Lys Lys Thr Leu Gly Pro Thr Trp Ala Gln His

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Arg Trp Met Val Arg Val Leu Glu Thr Phe Gly Ser Asp Pro Asp Phe

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Glu His Ala Asn Tyr Ala Gln Thr Lys Gly His Lys Ser Pro Trp Gly

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Pro Glu Asn Thr Phe Leu Gly Phe Ala Ile Glu Gln His Leu Asn Ser

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Val Tyr Gly Lys Val Asp Ser Phe Trp Lys Asn Lys His Ile Tyr Phe

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Arg Cys Val Phe Leu Lys Pro Lys Phe Pro Pro Pro Asn Ser Arg Lys

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Gln His Pro Tyr Ala Glu Asn Phe Ile Gly Lys Pro His Val Trp Thr

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Val Ser Ile Phe Gln Ile Arg Ala Tyr Tyr Gln Arg Leu Lys Asp Ile

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Pro Gly Pro Pro Ala Asn Ala Phe Trp Asn His Leu His Ile Gln Thr

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His Arg Lys Gln Gln Arg Gly Asn Thr His Ala Ser Gln Lys Pro Phe

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Ser Ser Gly Glu Asp Ile Ala Leu Glu Leu Thr Ser Cys Gly Phe Ser
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Phe Phe Phe Phe Phe Phe Phe Leu Arg Gln Ser Leu Thr Val Ser
1345 1350 1355 1360

Pro Arg Leu Glu Cys Ile Phe Leu Cys Pro Thr Lys Thr His Ile Pro
1365 1370 1375

Ser Gln Leu Thr Ala Thr Ser Thr Ser Gln Val Gln Glu Met Leu Leu
1380 1385 1390

Pro Pro Pro Lys Leu Gly Ser Gln Ala Cys Ala Thr Thr Pro Ser Val
1395 1400 1405

Leu Tyr Phe Lys Arg Trp Gly Phe Thr Met Leu Ala Arg Leu Val Ser
1410 1415 1420

Asn Ser Pro Lys Val Ile His Leu Pro Trp Leu Pro Lys Met Leu Asp

1425 1430 1435 1440

Tyr Arg Cys Glu Pro Leu His Leu Ala Ser Lys Ile Ser Ile Trp Gln

1445 1450 1455

Ile His Ile Ala Thr Phe Ile Leu Val Lys Ile Pro Lys Cys Phe His

1460 1465 1470

Thr Ser Gln Lys Ala Thr Arg Asn Ser Ala Trp Thr Pro

1475 1480 1485

<210> 5

<211> 2298

<212> DNA

<213> Homo sapiens

<400> 5

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gcagagggaaa ataagaacac agtggatgtc gagaacggtg cttctatggc aggatatgcg 240

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gagaacaaag ttgactatac ttttgtgaat ggctcagcag ccaacaccac caatggtaact 360

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<211> 765

<212> PRT

<213> Homo sapiens

<400> 6

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20 25 30

Thr Phe Gln Gln Pro Arg His Gln Ser Ser Val Lys Leu Arg Glu Gln
35 40 45

Ile Leu Asp Leu Ser Lys Arg Tyr Val Lys Ala Leu Ala Glu Glu Asn
50 55 60

Lys Asn Thr Val Asp Val Glu Asn Gly Ala Ser Met Ala Gly Tyr Ala
65 70 75 80

Asp Leu Lys Arg Thr Ile Ala Val Leu Leu Asp Asp Ile Leu Gln Arg
85 90 95

Leu Val Lys Leu Glu Asn Lys Val Asp Tyr Ile Val Val Asn Gly Ser
100 105 110

Ala Ala Asn Thr Thr Asn Gly Thr Ser Gly Asn Leu Val Pro Val Thr

115 120

125

Thr Asn Lys Arg Thr Asn Val Ser Gly Ser Ile Arg Ile Ala Val Glu

130 135

140

Asn His Leu Val Leu Leu His Pro Leu Trp Ile Ile Ser Tyr Gly Arg

145

150

155

160

Lys Ala Leu Tyr Cys Trp Leu Arg Thr Glu Ala Ile Leu Tyr Asn Lys

165

170

175

Ser Thr Asn Gly Gly Gln Asp Lys Cys Val Phe Pro Pro Ile Asp Gly

180

185

190

Tyr Pro His Tyr Glu Gly Lys Ile Lys Trp Ile Asn Asp Met Cys Arg

195

200

205

Ser Asp Pro Cys Lys Ala His Tyr Gly Ile Asp Gly Ser Ser Cys Thr

210

215

220

Phe Phe Ile Tyr Leu Ser Asp Ala Asp Asn His Cys Pro His Ala Pro

225

230

235

240

Trp Arg His Lys Asn Pro Tyr Asp Asp Ala Glu His Asn Ser Cys Ala

245

250

255

Glu Ile Arg Ser Asp Phe Glu Leu Leu Tyr Ser Val Ile His His Lys

260

265

270

Asp Glu Phe His Phe Met Arg Leu Arg Arg Arg Arg Met Val Glu Gly

275

280

285

Trp Ala Gln Ile Ala Lys Ser Leu Ala Asp Lys Gln Asn Ala Glu Lys

290

295

300

Lys Lys Arg Lys Lys Ala Leu Val His Leu Gly Ile Ile Thr Lys Asp

305

310

315

320

Thr Val Ser Lys Ile Ala Glu Thr Gly Phe Ser Ala Ala Pro Leu Gly

325

330

335

Asp Leu Val His Trp Ser Asp Ser Ser Ala Tyr Ala Ala Gly

340

350

His Asp Val Arg Ile Thr Ala Ser Leu Ala Glu Leu Lys Asp Val Val

355

360

365

Lys Lys Ile Ile Gly Asn Arg Ser Gly Cys Pro Ser Val Gly Asp Arg

370

375

380

Ile Val Glu Leu Leu Tyr Ala Asp Val Ile Gly Leu Gly Gln Phe Lys

385

390

395

400

Lys Thr Leu Gly Pro Thr Trp Ala Gln His Arg Trp Met Val Arg Val

405

410

415

Leu Glu Thr Phe Gly Ser Asp Pro Asp Phe Glu His Ala Asn Tyr Ala

420

425

430

Gln Thr Lys Gly His Lys Ser Pro Trp Gly Trp Trp Asn Leu Asn Pro

435

440

445

Asn Asn Phe Tyr Thr Met Phe Pro His Thr Pro Glu Asn Thr Phe Leu

450

455

460

Gly Phe Ala Ile Glu Gln His Leu Asn Ser Ser Asp Met His His Leu

465

470

475

480

Asn Glu Met Lys Arg Gln Asn Gln Thr Leu Val Tyr Gly Lys Val Asp

485

490

495

Ser Phe Trp Lys Asn Lys His Ile Tyr Phe Glu Ile Ile His Asn Tyr

500

505

510

Ile Glu Val Gln Ala Thr Val Tyr Asp Ser Ser Thr Pro Asn Ile Pro

515

520

525

Ser Tyr Ser Arg Asn His Gly Ile Leu Ser Gly Arg Asp His Arg Phe

530

535

540

Leu Leu Arg Glu Thr Phe Leu Leu Leu Gly Leu Gly Thr Pro Tyr Glu

545

550

555

560

Arg Cys Ala Pro Leu Glu Ala Met Ala Asn Arg Cys Val Phe Leu Lys

565

570

575

26.

Pro Lys Phe Pro Pro Pro Asn Ser Arg Lys Asn Thr Glu Phe Leu Arg

580

585

590

Gly Lys Pro Thr Ser Arg Glu Val Phe Ser Gln His Pro Tyr Ala Glu

595

600

605

Asn Phe Ile Gly Lys Pro His Val Trp Thr Val Asp Tyr Asn Asn Ser

610

615

620

Glu Glu Phe Glu Ala Ala Ile Lys Ala Ile Met Arg Thr Gln Val Asp

625

630

635

640

Pro Tyr Leu Pro Tyr Glu Tyr Thr Cys Glu Gly Met Leu Glu Arg Ile

645

650

655

Thr Ala Tyr Ile Gln His Gln Asp Phe Cys Arg Ala Ser Glu His Cys

660

665

670

His Pro Pro Ser Phe Ile Ile Arg Ser Leu Ser Arg Ala Thr Pro Pro

675

680

685

Thr Ser Leu Gly Leu Leu Leu His Leu Pro Gly Gly Ser Pro Gly Ser

690

695

700

Trp Glu Leu Val Glu Gly Pro Gly Trp Thr Leu Pro Val Gly Val Pro

705

710

715

720

Ser Arg Pro Gly Arg Pro Leu Gln Pro Gln Asn His Asp Gly Lys Lys

725

730

735

Ser Ile Cys Ser Gln Gly Leu Thr Phe Gly Gly Lys Ala Ile Glu Thr

740

745

750

Leu Phe Phe Ser Leu Phe Leu Lys Ile Tyr Phe Phe Lys

755

760

765

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<211> 948

<212> DNA

<213> Homo sapiens

<400> 7

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<210> 8

<211> 1295

<212> DNA

<213> *Homo sapiens*

<400> 8

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1295

<210> 9

<211> 2298

<212> DNA

<213> Homo sapiens

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2298

<210> 10

<211> 765

<212> PRT

<213> Homo sapiens

<400> 10

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Leu Leu Leu Val Phe Gly Leu Ile Trp Gly Leu Met Leu Leu His Tyr

31.

20

25

30

Thr Phe Gln Gln Pro Arg His Gln Ser Ser Val Lys Leu Arg Glu Gln

35

40

45

Ile Leu Asp Leu Ser Lys Arg Tyr Val Lys Ala Leu Ala Glu Glu Asn

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55

60

Lys Asn Thr Val Asp Val Glu Asn Gly Ala Ser Met Ala Gly Tyr Ala

65

70

75

80

Asp Leu Lys Arg Thr Ile Ala Val Leu Leu Asp Asp Ile Leu Gln Arg

85

90

95

Leu Val Lys Leu Glu Asn Lys Val Asp Tyr Ile Val Val Asn Gly Ser

100

105

110

Ala Ala Asn Thr Thr Asn Gly Thr Ser Gly Asn Leu Val Pro Val Thr

115

120

125

Thr Asn Lys Arg Thr Asn Val Ser Gly Ser Ile Arg Ile Ala Val Glu

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135

140

Asn His Leu Val Leu Leu His Pro Leu Trp Ile Ile Ser Tyr Gly Arg

145

150

155

160

Lys Ala Leu Tyr Cys Trp Leu Arg Thr Glu Ala Ile Leu Tyr Asn Lys

165

170

175

32.

Ser Thr Asn Gly Gly Gln Asp Lys Cys Val Phe Pro Pro Ile Asp Gly

180

185

190

Tyr Pro His Tyr Glu Gly Lys Ile Lys Trp Ile Asn Asp Met Cys Arg

195

200

205

Ser Asp Pro Cys Lys Ala His Tyr Gly Ile Asp Gly Ser Ser Cys Thr

210

215

220

Phe Phe Ile Tyr Leu Ser Asp Ala Asp Asn His Cys Pro His Ala Pro

225

230

235

240

Trp Arg His Lys Asn Pro Tyr Asp Asp Ala Glu His Asn Ser Cys Ala

245

250

255

Glu Ile Arg Ser Asp Phe Glu Leu Leu Tyr Ser Val Ile His His Lys

260

265

270

Asp Glu Phe His Phe Met Arg Leu Arg Arg Arg Met Val Glu Gly

275

280

285

Trp Ala Gln Ile Ala Lys Ser Leu Ala Asp Lys Gln Asn Ala Glu Lys

290

295

300

Lys Lys Arg Lys Lys Ala Leu Val His Leu Gly Ile Ile Thr Lys Asp

305

310

315

320

Thr Val Ser Lys Ile Ala Glu Thr Gly Phe Ser Ala Ala Pro Leu Gly

325

330

335

Asp Leu Val His Trp Ser Asp Val Ile Thr Ser Ala Tyr Ala Ala Gly

340 345 350

His Asp Val Arg Ile Thr Ala Ser Leu Ala Glu Leu Lys Asp Val Val

355 360 365

Lys Lys Ile Ile Gly Asn Arg Ser Gly Cys Pro Ser Val Gly Asp Arg

370 375 380

Ile Val Glu Leu Leu Tyr Ala Asp Val Ile Gly Leu Gly Gln Phe Lys

385 390 395 400

Lys Thr Leu Gly Pro Thr Trp Ala Gln His Arg Trp Met Val Arg Val

405 410 415

Leu Glu Thr Phe Gly Ser Asp Pro Asp Phe Glu His Ala Asn Tyr Ala

420 425 430

Gln Thr Lys Gly His Lys Ser Pro Trp Gly Trp Trp Asn Leu Asn Pro

435 440 445

Asn Asn Phe Tyr Thr Met Phe Pro His Thr Pro Glu Asn Thr Phe Leu

450 455 460

Gly Phe Ala Ile Glu Gln His Leu Asn Ser Ser Asp Met His His Leu

465 470 475 480

Asn Glu Met Lys Arg Gln Asn Gln Thr Leu Val Tyr Gly Lys Val Asp

34/

485

490

495

Ser Phe Trp Lys Asn Lys His Ile Tyr Phe Glu Ile Ile His Asn Tyr

500

505

510

Ile Glu Val Gln Ala Thr Val Tyr Asp Ser Ser Thr Pro Asn Ile Pro

515

520

525

Ser Tyr Ser Arg Asn His Gly Ile Leu Ser Gly Arg Asp His Arg Phe

530

535

540

Leu Leu Arg Glu Thr Phe Leu Leu Leu Gly Leu Gly Thr Pro Tyr Glu

545

550

555

560

Arg Cys Ala Pro Leu Glu Ala Met Ala Asn Arg Cys Val Phe Leu Lys

565

570

575

Pro Lys Phe Pro Pro Pro Asn Ser Arg Lys Asn Thr Glu Phe Leu Arg

580

585

590

Gly Lys Pro Thr Ser Arg Glu Val Phe Ser Gln His Pro Tyr Ala Glu

595

600

605

Asn Phe Ile Gly Lys Pro His Val Trp Thr Val Asp Tyr Asn Asn Ser

610

615

620

Glu Glu Phe Glu Ala Ala Ile Lys Ala Ile Met Arg Thr Gln Val Asp

625

630

635

640

Pro Tyr Leu Pro Tyr Glu Tyr Thr Cys Glu Gly Met Leu Glu Arg Ile
645 650 655

Thr Ala Tyr Ile Gln His Gln Asp Phe Cys Arg Ala Ser Glu His Cys
660 665 670

His Pro Pro Ser Phe Ile Ile Arg Ser Leu Ser Arg Ala Thr Pro Pro
675 680 685

Phe Pro Phe Gln Gly Asn Pro Thr Thr Arg Leu Arg Leu Val Leu Pro
690 695 700

Pro Phe Pro Glu Leu Ala Gly Pro Cys Ser His Arg Asn His Pro Gly
705 710 715 720

Gly Lys Lys Leu Tyr Trp Phe Ser Arg Thr Asn Leu Trp Gly Glu Ser
725 730 735

Asn Arg Asp Thr Leu Phe Leu Ser Phe Phe Lys Asp Leu Phe Leu Glu
740 745 750

Ile Ile Lys Tyr Phe Tyr Trp Asp Val Arg Cys Arg Arg
755 760 765

<210> 11

<211> 237

<212> DNA

<213> Homo sapiens

<400> 11

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tctcgacta atttatgggg tgaatcta at cgtgatactt tattttatc ttttttaaa 180
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<210> 12

<211> 78

<212> PRT

<213> Homo sapiens

<400> 12

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1 5 10 15

Pro Pro Phe Pro Glu Leu Ala Gly Pro Cys Ser His Arg Asn His Pro
20 25 30

Gly Gly Lys Lys Leu Tyr Trp Phe Ser Arg Thr Asn Leu Trp Gly Glu
35 40 45

Ser Asn Arg Asp Thr Leu Phe Leu Ser Phe Phe Lys Asp Leu Phe Leu
50 55 60

Glu Ile Ile Lys Tyr Phe Tyr Trp Asp Val Arg Cys Arg Arg
65 70 75

<210> 13

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer

<400> 13

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28

<210> 14

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer

<400> 14

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24

<210> 15

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer

<400> 15

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30

<210> 16

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer

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